

What is claimed is:

1. A device, comprising:
a housing; and
a lower plurality of blades cooperating to define an exit aperture from said housing, said lower plurality of blades carried within said housing in a movable manner with respect to one another so as to enable the size of said exit aperture to be varied for singulating articles falling through said exit aperture.
2. The device of claim 1 additionally comprising identification information carried by said device.
3. The device of claim 2 wherein said identification information includes one of an RF tag, bar code, and human readable text.
4. The device of claim 1 additionally comprising a metering device carried within said housing and controlling an entry aperture into said housing.
5. The device of claim 4 wherein a center of said entry aperture and a center of said exit aperture are offset from one another.
6. The device of claim 4 additionally comprising a separation device positioned between said entry aperture and said exit aperture.
7. The device of claim 6 wherein said separation device includes a guide.
8. The device of claim 6 wherein said separation device includes a slide.
9. The device of claim 4 wherein said metering device includes a valve.
10. The device of claim 4 wherein said metering device includes an upper plurality of blades carried within said housing and defining said entry aperture.
11. The device of claim 10 wherein one of said lower plurality of blades and said upper plurality of blades includes a pair of blades each having an opening formed therein, and wherein one of said apertures is formed by the cooperation of said openings in each of said blades.
12. The device of claim 10 wherein one of said lower plurality of blades and said upper plurality of blades includes a plurality of blades forming an iris.
13. The device of claim 10 wherein one of said lower plurality of blades and said upper plurality of blades is carried by said housing at an angle with respect to a horizontal.

14. The device of claim 10 wherein one of said lower plurality of blades and said upper plurality of blades is configured to define one of a circular aperture and an elliptical aperture.
15. The device of claim 10 wherein one blade of one of said lower plurality of blades and said upper plurality of blades has a circular opening therein and another blade of said one of said lower plurality of blades and said upper plurality of blades has one of a semi-circular opening and a circular opening therein.
16. The device of claim 10 wherein certain blades of one of said lower plurality of blades and said upper plurality of blades have friction increasing structures added to a surface thereof.
17. A singulating device, comprising:
a housing having an entry aperture and an exit aperture;
a metering device carried by said housing and controlling said entry aperture;
and
a lower blade carried within said housing and set off from said upper metering device to define a chamber there between, said lower blade controlling said exit aperture.
18. The device of claim 17 additionally comprising identification information carried by said device.
19. The device of claim 18 wherein said identification information includes one of an RF tag, bar code, and human readable text.
20. The device of claim 17 wherein a center of said entry aperture and a center of said exit aperture are offset from one another.
21. The device of claim 17 additionally comprising a separation device positioned between said entry aperture and said exit aperture.
22. The device of claim 21 wherein said separation device includes a guide.
23. The device of claim 21 wherein said separation device includes a slide.
24. The device of claim 17 wherein said metering device includes a valve.
25. The device of claim 17 additionally comprising a first plurality of lower blades.

26. The device of claim 17 wherein said metering device includes an upper plurality of blades.
27. The device of either claim 25 or claim 26 wherein one of said upper plurality of blades and said lower plurality of blades includes a pair of blades each having an opening formed therein, and wherein one of said apertures is formed by the cooperation of said openings in each of said blades.
28. The device of either claim 25 or claim 26 wherein one of said upper plurality of blades and said lower plurality of blades includes a plurality of blades forming an iris.
29. The device of either claim 25 or claim 26 wherein one of said upper plurality of blades and said lower plurality of blades is carried by said housing at an angle with respect to a horizontal.
30. The device of either claim 25 or claim 26 wherein one of said upper plurality of blades and said lower plurality of blades is configured to define one of a circular aperture and an elliptical aperture.
31. The device of either claim 25 or claim 26 wherein one blade of one of said upper plurality of blades and said lower plurality of blades has a circular opening therein and another blade of one of said upper plurality of blades and said lower plurality of blades has one of a semi-circular opening and a circular opening therein.
32. The device of either claim 25 or claim 26 wherein certain blades of one of said upper plurality of blades and said lower plurality of blades have friction increasing structures added to a surface thereof.
33. The device of claim 17 additionally comprising a sensor for producing a signal for controlling said metering device.
34. The device of claim 17 additionally comprising a first plurality of lower blades and wherein said metering device includes an upper plurality of blades.
35. The device of either claim 10 or claim 34 additionally comprising:
a set of teeth formed in a portion of each of the blades comprising said upper plurality of blades;
an upper drive pinion rotatably supported by said housing and positioned between said teeth of said upper plurality of blades;

a set of teeth formed in a portion of each of the blades comprising said lower plurality of blades; and

a lower drive pinion rotatably supported by said housing and positioned between said teeth of said lower plurality of blades.

36. The device of either claim 1 or claim 17 wherein said housing defines an upper end, said upper end adapted to receive an article storage container.

37. The device of claim 36 wherein said housing carries a device responsive to the presence and absence of a container attached to said upper end of said housing.

38. The device of either claim 1 or claim 17 additionally comprising a memory device carried by said housing, said memory device for storing information.

39. The device of claim 38 wherein said information includes a bit that is set to a first state when an article storage container is connected to said device and is set to a second state when said article storage container is detached from said device.

40. The device of claim 38 wherein said information includes information associating said device with a specific article storage container.

41. The device of claim 38 wherein said information includes information about one of the device or product in a storage container associated with the device.

42. The device of claim 38 additionally comprising a clock carried by said housing, said clock providing timing information.

43. The device of either claim 1 or claim 17 additionally comprising one of a global positioning system and an annunciator for identifying a location of the device.

44. The device of claim 17 additionally comprising an actuator for actuating said metering device and said lower blades such that when said entry aperture is open, said exit aperture is closed, and when said exit aperture is open, said entry aperture is closed.

45. The device of either claim 4 or claim 17 additionally comprising a sensor positioned between said entry aperture and said exit aperture for producing a signal representative of one of the number, the identity, the orientation, and the condition of articles.

46. A combination, comprising:

a housing defining an upper end and a lower end and a chamber there between, said upper end of said housing carrying an attachment mechanism; and
an adapter for connection to said attachment mechanism and for receiving an article storage container,

said housing carrying a device responsive to the presence and absence of an article storage container connected to said adapter.

47. The combination of claim 46 additionally comprising a memory device carried by said housing for storing information.

48. The combination of claim 47 wherein said information includes a bit that is set to a first state when the presence of an article storage container is detected and is set to a second state when the absence of an article storage container is detected.

49. The combination of claim 47 wherein said information includes information associating said combination with a specific article storage container.

50. A combination, comprising:

a flow control device carrying a memory; and
an article storage container connected to said flow control device, said memory containing information associating said flow control device and said connected container.

51. A system, comprising:

a housing carrying a memory;
a lower plurality of blades cooperating to define an exit aperture from said housing, said lower plurality of blades carried within said housing in a movable manner with respect to one another so as to enable the size of said exit aperture to be varied for singulating articles falling through said exit aperture;
a storage container connected to said housing; and
an article determining and actuating station having electronics for interrogating said memory, controlling said plurality of blades, and for determining the number of articles that have been dispensed.

52. A system, comprising:

a housing having an entry aperture and an exit aperture and carrying a memory;

a metering device carried by said housing and controlling said entry aperture;
a lower blade carried within said housing and set off from said upper metering device to define a chamber there between, said lower blade controlling said exit aperture;

a storage container connected to said housing; and
an article determining and actuating station having electronics for interrogating said memory, for controlling said lower blade, and for determining the number of articles that have been dispensed.

53. A method of dispensing articles, comprising:
dispensing articles at a bulk rate;
determining the number of articles dispensed; and
dispensing articles at a singulation rate lower than said bulk rate in response to said the number of articles dispensed.

54. The method of claim 53 wherein said determining includes determining the number of articles dispensed based on counting.

55. The method of claim 53 wherein said determining includes determining the number of articles dispensed based on weighing.

56. A method of dispensing articles, comprising:
connecting a flow control device having an article storage container connected thereto to a station;
interrogating said flow control device;
dispensing articles at a first rate based on said interrogating;
determining the number of dispensed articles;
dispensing articles at a second rate based on said determining; and
collecting the dispensed articles in a receptacle.

57. The method of claim 56 wherein said dispensing articles at a second rate includes reducing said dispensing from a rate of more than one article at a time to a rate of one article at a time.

58. The method of claim 56 additionally comprising:
storing said articles in said article storage container; and
using said flow control device to seal said article storage container.

59. The method of claim 56 wherein said interrogating includes detecting when said article storage container has been removed from said flow control device.
60. The method of claim 56 wherein said determining includes one of counting multiple articles, single articles, and partial articles passing through a counting area.
61. The method of claim 56 wherein said interrogation identifies one of whether said flow control device is properly associated with said article storage container, information about said flow control device, and information about articles in said container.
62. A method of dispensing articles, comprising:
- connecting a flow control device having an article storage container connected thereto to a station;
 - interrogating said flow control device;
 - setting the minimum and maximum sizes of an entry aperture of said flow control device based on said interrogating;
 - setting the minimum and maximum sizes of an exit aperture of said flow control device based on said interrogating;
 - varying the sizes of said entry aperture and said exit aperture between said minimum and maximum sizes;
 - determining the number of articles dispensed; and
 - collecting the articles in a receptacle after they have been dispensed.
63. The method of claim 62 additionally comprising controlling said varying based on said determining.
64. The method of claim 62 additionally comprising closing said entry aperture and said exit aperture at the conclusion of said dispensing.
65. The method of claim 64 wherein said entry aperture and said exit aperture cannot be opened upon disconnecting said flow control device from said station.
66. The method of claim 62 additionally comprising inhibiting said setting, counting and collecting in response to said interrogation identifying a problem.
67. The method of claim 62 wherein said varying is performed in accordance with a duty cycle having a predetermined profile and frequency.

68. The method of claim 67 wherein said varying is performed in accordance with a deadtime between duty cycles.

69. A method of associating a flow control device with an article storage container, comprising:

reading device identification information from said flow control device;

storing said device identification information;

reading article storage container identification information; and

storing said article storage container identification information so as to be linked with said stored device identification information.

70. The method of claim 69 additionally comprising storing information about the articles stored in said article storage container.

71. The method of claim 69 additionally comprising mechanically connecting said device and said article storage container.

72. The method of claim 69 additionally comprising storing information identifying if said device and said article storage container have been mechanically disconnected.

73. A method, comprising:

connecting a flow control device having an article storage container connected thereto to a station;

setting the minimum and maximum sizes of an entry aperture of said flow control device based on default values;

setting the minimum and maximum sizes of an exit aperture of said flow control device based on default values;

varying the sizes of said entry aperture and said exit aperture between said minimum and maximum sizes at a frequency based on default values;

determining if articles are dispensed at a desired rate and, if so, saving said default values and, if not, adjusting said default values until articles are dispensed at said desired rate.